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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,059	04/11/2007	Martin Fleischanderl	335.0113	2030
76444	7590	07/28/2009		
Setter Roche LLP P.O. Box 780 Eric, CO 80516			EXAMINER ZHENG, LOIS L	
			ART UNIT 1793	PAPER NUMBER
			NOTIFICATION DATE 07/28/2009	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/566,059

**Applicant(s)**

FLEISCHANDERL ET AL.

**Examiner**

LOIS ZHENG

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 April 2007.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.  
4a) Of the above claim(s) 27-41 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-26 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SE-US)  
Paper No(s)/Mail Date 6/13/06, 7/21/09  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1-41 are amended in view of applicant's amendment filed 24 January 2006.

### ***Election/Restrictions***

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-26, drawn to a method for producing a hardened steel part.

Group II, claim(s) 27-40, drawn to a corrosion protection coating for steel sheets.

Group III, claim(s) 41, drawn to a hardened steel part.

The invention listed as Groups I - III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

WO2001/088216, whose corresponding English equivalent is Zeizinger et al. US 2003/0155048 A1 (Zeizinger), teaches a method for producing a hardened steel parting, comprising dipping the steel strip in a zinc bath comprising 0.12% aluminum, heating the coated steel strip and cooling the coated steel sheet.

The process as taught by Zeizinger reads on the claimed method for producing a hardened steel part. Therefore, special technical feature is lacking.

3. During a telephone conversation with Melanie Rauch on 16 July 2009 a provisional election was made without traverse to prosecute the invention of group I, claims 1-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-41 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 1 recites the limitation "the cooling rate" in line 13. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4, 8, 10-14 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 03/035922, whose English equivalent is Imai et al. US 2004/0166360 A1(Imai).

Imai teaches a process to form a hardened steel sheet for hot-press forming, comprising coating the metal surface with a zinc based plating layer, heating the coated substrate in an oxygenizing atmosphere(i.e. admission of atmospheric oxygen), wherein an oxide layer is formed on the surface of zinc plated steel sheet and diffusion of Zn and Fe metals occurs during the heating process(abstract, paragraphs [0052, 0077-0079, 0107-0110]). Imai further teaches that zinc alloys such as zinc-5% aluminum can be used as the coating material (paragraphs [0057-0059]). Fig. 1 of Imai further shows subsequent cooling at a rate of 20°C/sec.

Regarding claims 1-2, 8 and 10, Imai teaches forming the hardenable steel alloy into a steel sheet(paragraphs [0101-0106]).

Regarding claims 3-4, Imai further teaches coating by claimed hot dipping or electrolytic deposition(paragraphs [0054-0055, 0108]).

Regarding claims 11-14, since Imai teaches the same coating process as claimed, the examiner concludes that oxide of aluminum(i.e. high oxygen affinity elements) would have inherently formed on the surface of zinc based coating of Imai. In addition, since zinc and iron diffusion takes place during the annealing step as taught by Imai, the examiner concludes that the zinc based coating produced by the process of Imai would have inherently comprises a Zn-Fe alloy layer wherein the Fe content decreases towards the surface of the coating layer and Zn content increases towards the surface of the coating layer. Therefore, the Zn based coating layer as taught by Mai inherently contains an iron-rich phase(i.e. alloying phase closest to the steel substrate) and a zinc rich phase(i.e. alloying phase towards the surface of the Zn alloy coating

layer), and parts of these iron-rich and zinc-rich phases would inherently contain the claimed Zn to Fe ratios. The top surface of the Zn alloy coating layer by the process of Imai would have inherently has a zinc content of  $\geq 90\%$ .

Regarding claims 16-17, Imai further teaches the claimed zinc alloy bath temperature of  $460^{\circ}\text{C}$  (Fig. 1).

Regarding claim 18, Imai further teaches the claimed inductive heating (paragraph [0054]).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai.

The teachings of Imai are discussed in paragraph 8 above. However, Imai does not explicitly teach the coating thickness.

Regarding claim 15, since coating thickness effects coating's ability to inhibit cathodic corrosion (i.e. the thicker coating, the longer protection) and the coating thickness can be varied by changing coating time and heat treatment duration, one of ordinary skill in the art would have found it obvious to have varied the coating thickness by varying coating time via routine optimization in the process of Imai in order to achieve desired coating thickness to produce desired level of cathodic protective action as claimed.

11. Claims 5-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai, in view of Arezzo et al. US 6,335,053 B1(Arezzo).

The teachings of Imai are discussed in paragraphs 8 above. However, Imai does not explicitly teach the claimed two step coating process as recited in claims 5-7 and the claimed amount of high oxygen affinity elements as recited in claim 9.

Arezzo teaches traditional zinc alloy coating methods including hot dipping or electrodeposition(col. 1 lines 19-21). Arezzo further teaches a two-step Zn alloy coating process wherein a zinc layer is first deposited to a metal surface by PVD, or electro-deposition, or hot dipping, followed by deposition of the alloying elements such as Al in an amount of 0.2-3%(abstract, col. 3 lines 6-12 and 25-27, Example 1). The deposition of the alloying element can be done via vaporization(col. 3 lines 1-3).

Regarding claims 5-7 and 9, it would have been obvious to one of ordinary skill in the art to have incorporated the two-step Zn alloy coating process, including deposition of alloying element such as Al in the amount of 0.2-3%, as taught by Arezzo into the coating process of Imai in order to produce a Zn alloy coating with improved corrosion resistance, weldability, ductility and adhesion features as taught by Arezzo(abstract, col. 2 lines 23-29).

12. Claims 19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai, in view of applicant's admitted prior art.

The teachings of Imai are discussed in paragraph 8 above. However, Imai does not explicitly teach the claimed forming using a die during heating or cooling.

Paragraph [0018] of the instant specification admits that forming steel parts and simultaneously harden them in a single step is well known in the art, wherein a steel sheet is heated to a temperature above austenitization temperature, and then formed in a cold die which hardens the steel sheet by rapidly cooling it.

Regarding claims 19 and 21-26, one of ordinary skill in the art would have found it obvious to have incorporated the simultaneous formation of steel parts in a die and hardening as admitted by the applicant into the inductive heating and the subsequent cooling steps in the process of Imai with expected success and with the advantage of reduced processing time.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai, and further in view of Gegner US 2003/0193120 A1(Gegner).

The teachings of Imai are discussed in paragraph 8 above. However, Imai does not explicitly teach the claimed radiation furnace.

Gegner teaches a hardening process via heat treating a metal(abstract). Gegner further teaches that radiation or inductive heating can both be used for the heat treatment(paragraph [0022]).

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted the inductive furnace with a radiation furnace in the process of Imai with expectation of success since Gegner teaches that inductive heating and radiation heating are functionally equivalent.

14. Claims 1-3, 10 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S. C 103(a) as being obvious over



WO2001/088216, whose corresponding English equivalent is Zeizinger et al. US 2003/0155048 A1 (Zeizinger).

Zeizinger teaches a method for producing a hardened steel part, comprising forming a cold steel strip, dipping the steel strip in a zinc bath comprising 0.12% aluminum at 460°C, post-annealing the coated steel strip at 530°C and cooling the coated steel sheet to less than 50°C (paragraphs [0043-0048]).

Regarding claims 1-3 and 10, the step of forming a cold steel strip reads on "forming the hardenable steel alloy into a sheet before the heating" as claimed. In addition, no specific restrictions are disclosed by Zeizinger for its heating conditions, the examiner assumes that heating as taught by Zeizinger is taking place in a normal atmospheric environment, and the claimed microstructural change necessary for hardening and the claimed formation superficial oxide skin inherently take place during the heating step in the process of Zeizinger. Furthermore, Zeizinger teaches that its process produces galvanized steel part with very good mechanical properties, which implies a hardening step inherently taking place in the process of Zeizinger. Furthermore, the cooling step as taught by Zeizinger inherently includes the claimed calculated cooling rate to achieve hardening of the steel sheet.

Alternatively, since Zeizinger teaches a process comprising the same steel sheet forming, zinc coating, post annealing and cooling process steps as claimed, uses the same zinc coating bath with the same amount of aluminum as claimed and the same zinc coating and post annealing temperatures as claimed, one of ordinary skill in the art

would have found it obvious that the process of Zeizinger is capable of producing the same hardened steel part as claimed.

Regarding claims 16-17, Zeizinger teaches a zinc coating temperature of 460°C, which falls within the claimed coating temperature ranges.

Regarding claim 18, Zeizinger teaches the claimed inductive heating (paragraph [0047]).

15. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zeizinger.

The teachings of Zeizinger are discussed in paragraph 14 above.

Regarding claims 11-13, even though Zeizinger does not explicitly mention the claimed zinc-rich and iron-rich phases, Zeizinger does teach a process that comprises the same process steps and using the same Zn-Al alloy. Therefore, one of ordinary skill in the art would have expected the claimed two phase coating (i.e. zinc-rich phase and iron-rich phase) in the coating of Zeizinger (i.e. zinc-rich phase towards the surface of the coating and iron-rich phase towards the steel substrate), each phase having areas with the claimed zinc to iron ratios.

Regarding claim 14, since Zeizinger teaches a process that comprises the same process steps and using the same Zn-Al alloy, the one of ordinary skill in the art would have found the claimed zinc content in some areas of the coating formed by the process of Zeizinger with expected success.

Regarding claim 15, since coating thickness effects coating's ability to inhibit cathodic carrion (i.e. the thicker coating, the longer protection) and the coating thickness

can be varied by changing coating time and heat treatment duration. Therefore, one of ordinary skill in the art would have found it obvious to have varied the coating thickness by varying coating time via routine optimization in order to achieve desired coating thickness to produce desired level of cathodic protective action as claimed.

16. Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zeizinger, in view of Arezzo et al. US 6,335,053 B1(Arezzo).

The teachings of Zeizinger are discussed in paragraphs 14-15 above. However, Zeizinger does not explicitly teach electrolytic coating application, the claimed two step coating process and the claimed amount of high oxygen affinity elements.

Arezzo teaches traditional zinc alloy coating methods including hot dipping or electrodeposition(col. 1 lines 19-21).

Regarding claim 4, it would have been obvious to one of ordinary skill in the art to have substituted the hot dipping coating step of Zeizinger with electrolytic deposition method with expectation of success since Arezzo teaches these two zinc coating methods are functionally equivalent.

Arezzo further teaches a two-step Zn alloy coating process wherein a zinc layer is first deposited to a metal surface by PVD, or electro-deposition, or hot dipping, followed by deposition of the alloying elements such as Al in an amount of 0.2-3%(abstract, col. 3 lines 6-12 and 25-27, Example 1). The deposition of the alloying element can be done via vaporization(col. 3 lines 1-3).

Regarding claims 5-9, it would have been obvious to one of ordinary skill in the art to have incorporated the two-step Zn alloy coating process, including deposition of

alloying element such as Al in the amount of 0.2-3%, as taught by Arezzo into the coating process of Zeizinger in order to produce a Zn alloy coating with improved corrosion resistance, weldability, ductility and adhesion features as taught by Arezzo (abstract, col. 2 lines 23-29).

17. Claims 19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zeizinger, in view of applicant's admitted prior art.

The teachings of Zeizinger are discussed in paragraphs 14-15 above. However, Zeizinger does not explicitly teach the claimed forming using a die.

Paragraph [0018] of the instant specification admits that forming steel parts and simultaneously harden them in a single step is well known in the art, wherein a steel sheet is heated to a temperature above austenitization temperature, and then formed in a cold die which hardens the steel sheet by rapidly cooling it.

Regarding claims 19 and 21-26, one of ordinary skill in the art would have found it obvious to have incorporated the simultaneous formation of steel parts in a die and hardening as admitted by the applicant into the inductive heating and the subsequent cooling steps in the process of Zeizinger with expected success and with the advantage of reduced processing time.

18. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zeizinger, and further in view of Gegner US 2003/0193120 A1 (Gegner).

The teachings of Zeizinger are discussed in paragraphs 14-15 above. However, Zeizinger does not explicitly teach the claimed radiation furnace.

Gegner teaches a hardening process via heat treating a metal (abstract). Gegner further teaches that radiation or inductive heating can both be used for the heat treatment (paragraph [0022]).

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted the inductive furnace with a radiation furnace in the process of Zeizinger with expectation of success since Gegner teaches that inductive heating and radiation heating are functionally equivalent.

### ***Double Patenting***

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 1-26 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of copending US Patent Application No. 10/566,219. Although the conflicting claims are not identical, they are not

patentably distinct from each other because claims 1-14 of copending US Patent Application No. 10/566,219 teaches a steel hardening process that comprises substantially the same galvanization, heating and cooling steps incorporating the same types and the same amount of high oxygen affinity elements.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. Claims 1-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 8-28 of copending Application No. 10/566069. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 3, 8-28 of copending Application No. 10/566069 teaches a steel hardening process that comprises substantially the same galvanization, heating and cooling steps incorporating the same types and the same amount of high oxygen affinity elements.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

22.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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LLZ